

Claims

1. A rare earth garnet sintered compact, annealed in a pressurized oxygen-containing atmosphere after hot isostatic pressing (HIP,) having:
 - an average crystallite diameter ranging from 0.9 to 9 μm ;
 - a light loss coefficient of 0.002 or smaller cm^{-1} ; and
 - a transmitting wave front distortion of 0.05 or smaller $\lambda \text{ cm}^{-1}$.
2. A method for manufacturing a rare earth garnet sintered compact comprising:
 - a step for presintering a molded compact of a rare earth garnet;
 - a step for pressing the obtained presintered compact with an hot isostatic pressing (HIP) into HIP sintered compact; and
 - a step for annealing the obtained HIP sintered compact in the oxygen-containing atmosphere at a 4.5 or higher MPa pressure into a sintered compact having an average crystallite diameter ranging from 0.9 to 9 μm , a light loss coefficient of 0.002 or smaller cm^{-1} , and a transmitting wave front distortion of 0.05 or smaller $\lambda \text{ cm}^{-1}$.
3. A method for manufacturing the rare earth garnet sintered compact according to claim 2 wherein:
 - in annealing, an oxygen partial pressure of the oxygen-containing atmosphere is 900 or higher KPa and an annealing temperature is an HIP temperature or lower.
4. A method for manufacturing the rare earth garnet sintered compact according to claim 3 wherein:
 - the annealing temperature is 1100 to 1600 deg C and a full pressure of the oxygen-containing atmosphere is 4.5 or higher MPa in annealing.